

COMPUTERWORLD

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'Fail-Safe' System Is Demanded As Court Told of Welfare Chaos

By a CW Staff Writer

LOS ANGELES—A joint suit filed here by welfare recipients and a taxpayer asks for the establishment of a "fail-safe" system to back up the present computerized system for handling welfare checks.

The complaint, filed last week, contends that the computer system, after a year in operation, is still producing errors 10 to 25% of the time, and that the defendants had refused to follow the advice of the manufacturer-vendor (Honeywell) as to how to reduce the error levels. As a result of the errors, it was said, one family had been evicted and others threatened with eviction, while the costs of the program to the state had been increased through the loss of federal money.

The suit was later described by County Counsel John D.

Maharg as being factually and legally ill-founded, although, he said, there had been some errors in the past and that some changes were currently being made.

Only Injunction Asked

No damages are sought in the action, which includes provision for naming presently unknown people—who might well include programmers, operators, etc. It was taken under California law as a petition for a writ of mandate, that state's equivalent of the writ of mandamus. Such writs are often used to compel public officials to fulfill their duties.

The taxpayer's suit contends that a waste of money is involved and should be stopped. The emphasis here lies in the issuing of emergency grocery vouchers to recipients

when their checks fail to come through on time. These grocery orders are apparently taken off later payments to the recipient as if they were cash, but cannot be charged back to the federal government because cash itself was not issued. As a result of this it appears that the County of Los Angeles has to pay more of the welfare costs than it really needs to.

User Responsible

Throughout their argument the plaintiffs take exception to the tendency of what they call "anthropomorphizing" the computer—that is regarding it as a living, intelligent object which can be blamed for making errors. They cite a few legal cases and many books which they feel show that such a viewpoint should not be acceptable. They also

(Continued on Page 14)

Many States Have No Rules For Controlling EDP Schools

By Leslie Doty
CW Associate Editor

The regulation of EDP schools across the nation runs the gamut from specific rules to voluntary nonexistent, according to the results of a survey conducted by *Computerworld*.

Of the 40 states which responded, 24 reported some degree of regulation. Additionally, three states reported regulation under certain conditions, one reported that only registration was required, and one reported voluntary self-regulation only.

Eleven states reported no regulation at all. Pennsylvania, the only state known to specifically mention EDP schools in its regulation (ICW, Sept. 8), is one of the best regulated. Maurice Ozer, secretary to the State Board of Private Business Schools, told *Computerworld* that the state was trying to establish even stronger regulations.

Several Outspoken

Several states without regulations were quite outspoken in the need for regulation.

"Yes! Standards are required to insure an effective, quality data processing education program [at

private schools] such as that which exists in Georgia's 26 post-secondary vocational education schools," said Joseph D. Dolan, director of the Systems & DP Division of the Georgia Department of Education.

Dolan reported that private EDP schools fall under the jurisdiction of no state department

and that the state currently has no plans to implement regulation of private EDP schools.

Regulation Seen Needed

Asked if regulations were needed, he answered with an emphatic "yes."

The reason, he said, was "to make it clear as to whether the

(Continued on Page 8)

IBM Releases DataText Software to Customers

WHITE PLAINS, N.Y.—IBM has halfway reversed one of its policies and released the Call 360 DataText software, without program maintenance, to its customers. Previously, the DataText software had been a proprietary product not available to IBM customers but it was being used to support services offered in competition with some IBM customers.

The policy change, which was characterized as "just a soporific" by Jim Mullins of VIP Systems, leaves open the question of whether the Call 360 services are in conflict with the 1956 IBM consent decree. The position of Call 360 Basic was not changed, and it continues to be a proprietary program.

The IBM announcement said that the DataText system was being made available to IBM customers "who are interested in operating a system devoted entirely to DataText using a specific configuration. The program is available on an 'as is' basis; for example, it will not carry program maintenance support."

Meaning Uncertain

No details as to the exact mean-

ing of the announcement were available at press time. It appeared probable that the reference to a system having to be "devoted entirely" to DataText merely reflected the fact that Call 360 DataText has no provision for any background programming. The reference to the lack of maintenance support did not make it clear as to whether the

(Continued on Page 2)

Data Collection

An Aquapunt unit, which produces sound waves and then records the echoes, is lowered into the water in a continuing search for oil deposits. The data collected is then run through a computer to determine the kind of earth layers below the ocean floor. *Story on page 8.*

Worldwide Systems Data to Be Offered

WASHINGTON, D.C.—The Air Force anticipates release Sept. 27 of preliminary specifications for replacement of the automatic data processing systems for the Worldwide Military Command and Control System, the Department of Defense said last week.

"ment of the system is potentially the computer procurement being considered by the government. Fears have been expressed that a bidder may be able to set do facto

standards for a considerable number of industrial and government contractors.

"Release of these preliminary specifications at this time is to promote maximum industry competition and to provide for initial industry planning," the department said. "The release does not, however, indicate particular urgency for this procurement action."

There is no firm date at this time for release of the request for proposals, the department said.

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Users Asked to Help Navy Commission New Division

Special to Computerworld

S. WEYMOUTH, Mass. — The South Weymouth Naval Air Station has invited computer manufacturers and users to participate in a symposium and exposition to be held at the base Oct. 26.

The keynote speaker at the event, the commissioning of a Reserve Systems Analysis Division, will be Navy Cmdr. Grace Hopper, a pioneer in data processing who is on the staff of the secretary of the Navy.

Companies or individuals in the EDP field who would like to contribute to the theme of "Computers and Computer Management for the Future" are invited to participate, said Lt. Cmdr. David Jaynes.

Particular emphasis will be given to providing a forum for announcing and displaying new products and techniques, he said.

New Division

The new division, to be manned by the Naval Air Reserve, will study, analyze, and develop projects utilizing computer methods

Prudence and the PHIL

TRENTON, N.J. — The story in the *Trentonian* was about oral contraceptives ("Thirteen million women throughout the world are using oral contraceptives," and some was on the newspaper's copy desk headed the item "Control Data."

and techniques.

Projects will include such things as command and control analysis, logistic planning, and anti-air warfare systems analysis and effectiveness studies for the active forces. The division also will develop and implement modern management methods for the Navy and Naval Air Reserve program.



Lt. Cmdr. Grace Hopper

IBM Releases DataText Software to Customers

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program would in fact be updated as IBM changed its own systems.

Joan Van Housen of VIP Systems whose firm felt its business was threatened by IBM offering Call 360 services to its clients at an apparent uncompetitive or subsidized rate (CW, July 31) was not available for comment. She was on the high seas sailing toward the Virgin Islands. Mullinix, a VIP executive, told the new policy by *Computerworld*, said that "it was inevitable because of the requirements of the consent decree." However, he pointed out that it made little difference to VIP Systems that the Call 360 service, from their knowledge of it, "left much to be desired."

"VIP Systems," he said, "will continue to use AFS in coin-

petition with the Call 360 DataText simply because we can give our customers more service."

The real question, Mullinix said, is the definition of "service bureau." "A service bureau in 1968 is certainly not just what a service bureau was in 1956. Sometime, someone has got to sit down and decide what a service bureau is, in light of the terrific advance in technology. Then we can measure IBM's actions in this matter."

Antitrust Not Involved

An IBM spokesman denied that any part of the company's change in policy had been caused by a consideration of the antitrust situation and said that it had occurred simply because "we found there was an appreciable interest in the software."

IBM Man Explains Restriction of the Main PL/I Manual

By a CW Staff Writer

NEWTON, Mass. — An IBM spokesman told a Route 128 DPMA chapter meeting here that the companion guide by the PL/I language specification manual being in the hands of programmers was the reason for its withdrawal and unannounced replacement by a restricted manual (CW, Sept. 4).

"There were about 65,000 of the manuals out," said Robert Chernis, the IBM regional coordinator for PL/I, "and we often found programmers trying to get statements or options which had not been implemented. The idea of restricting the language specification manual was to prevent this. Restricting it was the fastest way we could do it."

PL/I vs. Cobol Emphasized

Chernis' talk was titled "PL/I, the Language of the Future?" and included an IBM slide presentation of what PL/I came out of a committee whose function was to find a successor for Fortran. His remarks, however, were more directed to the comparative strength of PL/I as opposed to Cobol rather than to Fortran. His argument was that the machine independence, ease of learning, and flexibility of PL/I were among the areas which gave it superiority as a single language.

He pointed out that *Codasy*, which acts as the sponsor of Cobol, recognized that Cobol, because of standardization activities, is not able to respond to user's needs quickly enough.

Questions Answered

In answer to some questions from the audience of data processing managers, Chernis said that the freedom of the PL/I language which allowed the language to be machine independent did mean that a manager could not see what configuration was required by a program on a PL/I printout as

quickly as he could with Cobol. Asked about the incompatibilities between the OS and DOS PL/I compiler, he said that in his opinion the PL/I language was very closely meshed with the available operating systems, and that as a result there were no incompatibilities between different operating systems both upward and downward. However, he estimated that 99% of the language would be compatible.

Standardization Position Given

Chernis said that PL/I standardization seemed to be moving forward. He showed a Standards Committee report, distributed from IBM's regional headquarters, which said that the committee was approving the language for further standardization progress and pointed out that no members of the committee concerned were IBM people. He also said that some seven or eight non-IBM companies had committed themselves to produce PL/I compilers.

In general, he recommended learning only parts of the language, and told about one of his customers who tried to learn the full language. He said that as a result, IBM's regional headquarters, after 2-1/2 years with the language, still had not studied all of it, because he had never had the need, he said.

The meeting was the first of the 1968/69 year for the Route 128 DPMA chapter. Richard Wilson, of General Radio, chapter president, said that he believed that the year's program would be a major success.

Martell Gets SID Post

WATERTOWN, Mass. — John F. Martell, director of publications for Keydata and Adams Associates, Inc., has been elected chairman of the New England Chapter of the Society for Information Display.

Systems Analyst Running for Congress

By a CW Staff Writer

CONCORD, Mass. — Chandler Harrison (Harry) Stevens is running for Congress as an Independent. And he thinks the voters have been so alienated by the old guard of both parties that he has a good chance of winning.

Stevens, a McCarthy supporter, is a rare bird among politicians.



Harrison Stevens

He not only knows what a data bank he could program a computer to create on.

Stevens, a systems analyst and management consultant who worked for Adams Associates before successfully running for a seat in the Massachusetts State Legislature in 1964, is an important jump ahead of most elected officials in dealing with computer-related problems. He may not know all the answers, but he at least understands the questions.

Computers and Government

While Stevens, who holds a Ph.D. in economics from MIT, is not campaigning on his computer background, he is quick to see ways in which computers can be used in the public interest. For instance, he designed an experimental computer graphics system for legislative redistricting which could help to eliminate gerrymandering.

Stevens believes Congress should have some members with

technical backgrounds, people who won't have to rely entirely on outside advice on technology questions, people who know the right questions to ask about technological developments.

Stevens has a number of computer people on his campaign committee, a situation which contradicts a commonly held belief that computer people prefer to stick to their profession and to stay out of politics. (See editorial, page 4.)

Computer Service Helps Students To Choose Most Suitable College

Special to Computerworld

NEW YORK — A computer assisted service to aid students in selecting colleges was demonstrated last week at Harcourt, Brace & World, Inc. The publishing company is operating the system, called *Select*, which was designed by Bernard Klein and Ray Kurzweil, seniors at MIT.

Prospective college students fill out a questionnaire and the data is matched against information

on courses and academic competition at 3000 American colleges. The student's aptitudes in 15 subject areas are compared to the aptitudes given that subject area at college.

The fee for the service will be \$15. In return, the student gets a list of 10 to 15 colleges.

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Number of Ticket Systems Jumps From Zero to Two

By a CW Staff Writer

LOS ANGELES — Two automated ticketing systems for entertainment and sports events are in competition here.

One system, Computicket [CW, April 10], started Sept. 9, is operated by Computicket Corp. of California, a subsidiary of Computer Sciences Corp. The other system, designed by Digital Scientific Corp., is operated by Ticket Reservations, Inc. of New York [CW, Aug. 14]. It uses a Control Data 1700 computer.

So far as is known, no ticket agent has both systems installed, so that purchasers have to go to different locations to buy tickets sold by each system.

Charges Only Partially Given

Ticket Reservations told *Computerworld* that its agent terminals rent for \$150 a month. The company said it requires renters to charge 25 cents for each ticket sold. Computicket declined to tell

Computerworld how much its terminals rent for, but did say that renters receive rebates, depending on their volume, which would help offset the rental charges.

Both companies declined to say how much promoters were charged for using the system, although Computicket did indicate that the maximum charge — if that has three billing rates — was less than 6% of the ticket cost.

The Computicket terminal units are linked to Computer Sciences' El Segundo computer center. The terminal operator transmits the customer's request for seats to a computer, which scans its inventory of unsold seats and transmits its reply back. A CRT displays the section, aisle, row, seat number, and price of the best available seat or seats.

Upon the customer's acceptance of the offer, the terminal prints the actual admission ticket in seconds.

The Ticket Reservations system operates similarly, except that it uses a teleprinter instead of a CRT.

TRS Felt More Advanced

A spokesman at the Los Angeles Forum, who asked not to be identified, said it chose the Ticket Reservations system because it was felt to be about a year and a half ahead.

Among the Forum's preferences for the Ticket Reservations system were the printed audit trail and the fact that the keys on the terminal stayed pushed down. If a mistake is made during part of the inquiry, it can be corrected without having to erase the whole entry, the spokesman said.

The keys staying down is also an advantage when several inquiries are to be made involving only partial changes in data for each, such as the date, he said.

"From a time standpoint, that is a tremendous advantage," he said.

Computicket said that it is working on a modification to its system, which it hopes to have in operation by next spring, that will allow multiple entries differing only in dates to be entered in abbreviated form after the first full entry.

Bonding Provided

The Forum spokesman also said that a significant factor in choosing the Ticket Reservations system was that the contract provided a bond in the event of a computer caused loss of revenue. Similar protection was not available with the Computicket system, he said.

Ticket Reservations told *Computerworld* that the coverage — written by Fidelity's Fund Insurance Co. — provided \$50,000 per event, with a \$2500 deductible amount, for losses incurred as the result of "system failures resulting from programming or personnel errors" up to a total of \$1 million.

Both Have Safeguards

Spokesmen for both systems explained that safeguards are built into the system so that terminals cannot be placed on local operation and issue tickets without changing the central computer's inventory.

Audit records are also maintained that show the value and types of tickets printed at each terminal, they said.

Both systems also provide daily inventory records in a matter of minutes — a job that can take hours by hand — and advance sales information, they said.

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'Mini Company' Helps Replace Vanishing Audit Trail

The Bell System was one of the first and is now one of the largest computer users in the world today. It recognized nearly 10 years ago the problems which computer users were bound to bring into the operation of audit departments and started training auditors to evaluate computerized billing systems, approve controls, and test conversion procedures.

Currently, Bell System companies have over 60 auditors specifically trained in auditing procedures for computers — and more are being trained. As a result of their experience in the field, they now believe that the day of the audit trail is vanishing, if it has not already vanished.

This article describes the problem, as set by Joseph J. Wasserman, manager of the audit development department at Bell Telephone Laboratories, Holmdel, N.J. It is condensed from the July/August Bell Telephone Magazine.

Through the Looking Glass

When punch card computer systems first appeared, auditors generally followed an "around the machine" approach. Essentially, this consisted of testing the relationship of input and output in terms of the function being performed by the machine. For example, if two cards representing both fixed and variable payroll information were fed through a punch card calculator, an auditor could at least partially test the program by manually determining that paychecks were accurate. However, this technique usually was ineffective for checking reports or summary information being accumulated throughout the process. It would be quite possible to process a paycheck correctly, but to accumulate annual tax data incorrectly. The auditor was comparing the machine's input with its

output much as he would have compared voucher files with ledger books 50 years ago.

If this technique was ineffective for punch card systems, it is almost useless with today's high speed magnetic tape systems, and will be even more so with on-line, real-time systems. In the future, the auditor now must work through the machine — which means he must understand what the program is doing and how it does it. The auditor must be able to see the machine itself as a tool to assist in its own operations. He no longer has piles of paper to paw through. The classical "paper trail" or "audit trail" is vanishing and is being replaced by invisible arrangements of molecules in an iron oxide coating on plastic tape or on drums.

The "audit trail" need redefining because it is now a misleading term. Many system design people seem convinced that controls are built into a computer system only to satisfy the outdated whims of the auditor. The capability to trace source documents through a system, to recreate tapes that might be lost or destroyed, to detect errors and prevent their subsequent re-entry, is as important to the programmer and anyone in management who uses the data as it is to the auditor. Management itself has the greatest responsibility here because failure to provide such controls can literally cause chaos in a business and could result in huge financial losses.

Means to the End

Clearly, if auditors are to gain the expertise needed to meet their expanded responsibilities, they develop really creative auditing techniques that fit the age of third generation computers.

One of the first audit techniques

"through the machine" involves a sampling concept, that tried and true tool of statisticians. A scientifically designed sampling program extracts every Nth record from a file for examination. This permits an auditor to appraise a situation through a sample — but using the speed and accuracy of the computer to extract the sample.

Some of the Bell System companies are now using a refinement of this technique to audit accounts receivable. Instead of merely selecting every Nth record from a review every account and extract only those meeting certain logic tests, which for predetermined reasons warrant attention. Then, when the computer has separated the wheat from the chaff, the auditor can spend his time analyzing only critical accounts, 95% of which need no attention.

Another audit technique is the "test deck" concept. This is actually an offshoot of the programmer's testing procedure, and can test all functions built into the system. The drawback is the fact that it takes valuable computer time, and is also difficult to maintain because of frequent computer program changes. Several of the Bell companies have developed an innovation on this technique which is proving very valuable. This — which is done during the developmental stage of a system — entails establishing an imaginary "account" or "office" for the auditor.

'Mini Company' Concept

A refinement of the imaginary account principle is Bell Laboratories' "Mini Company" concept. This is an expansion of the test deck, and is a complete model subsystem running concurrently on the machine with the regular live system. By comparing

known data from the live system with test data from the fictitious Mini Company transactions, auditors can quickly spot any irregularities in controls or processing within the machine.

The "audit module" includes many known audit techniques which will be some part of the normal computer system and which can be called in when the auditor wants them. These are sampling, extraction, comparison, controls, and extension. This makes the machine the auditor's tool so he can audit the system on a current, not an historical, basis. He can detect errors or control breakdowns sooner. The input/output devices can be in the auditor's office so he can activate an audit without visiting the accounting center. The audit module, built into the computer system, will enable the auditor to validate meaningful data more comprehensively.

The Mini Company concept is extremely flexible, for we can use any kind of input and output device, and, as with the audit module, these can be located in the audit office, remote from the central computer. With communications links, we can interface with other computer systems for audit purposes. It also can be used by a programmer for testing or a daily quality control.

No one would pretend that we have all the answers to the problems raised by the computer. But experience has convinced us that training is needed both throughout industry and the auditing profession. The time is here when the auditor must be able to test the system from people know exactly what procedures he will need to audit the computer so he can assure management that it has a well-controlled, fully auditable system.

Letters to the Editor

(Continued from Page 4)

A.A.S. degree programs with courses existing in U.S. and Ph.D. programs in the areas of computer science since all these programs are part of a continuum called computing and information processing.

Dr. John Manjotes
Section Chairman
Computer Technology
Purdue University
Hammond, Ind.

One P, Two A's

To the Editor:
Just another example of the kind of problems a national data bank will be faced with. Imagine your reporter's confusion when he cannot locate "Apalachin" because he spelled it "Apalachian" (CW, Aug. 28). Numbering schemes like ZIP (Zen in Performance?) are not the answer. Extensive cross-indexing is expensive, but essential to a system appropriately responsive to man's needs.

Apalachin, incidentally, is pronounced A-pa-lake-kin by the natives. It is located about seven miles west of Endicott, New York, home of IBM.

Myron E. Williams
Programmer
Apalachin, N.Y.

Your point is well-taken. In this case the problem lay in the automatic correction technique used. We knew that "Apalachin" was wrong — and corrected it.

File Security

To the Editor:
Your suggestions on "Improving the Security of Files" (CW, Sept. 11) prove, if anything, the impossibility of protecting a file from people who really want to get at it, and simultaneously the inevitability of the development of house-proud protection systems which in the long run will only frustrate legitimate users and serve as a shield for infiltration by the underworld. The only other answer is not to develop the Data Bank at all. Heaven help us.

James Enterline
President
Enterline Automation
and Computing, New York

I like your honesty in facing issues, but hope that we can go ahead and minimize — if not eliminate — the danger, no matter how small, of dealing with the exciting future. Ed.

Computerworld welcomes comments from its readers on any subject related to information handling and electronic data processing. Letters should be addressed to: Editor, Computerworld, 60 Austin St., Newton, Mass. 02160.

Readers who may call in their letters. Call (617) 527-2111 day or night and your opinion will be recorded.

Noteworthy

File Addressing by Calculation

By Ivan Flores
CIS Quest Reviewer

"Scatter Search Techniques," by Robert Morris, Computerworld of the ACM, Vol. 11, No. 1, Jan. 1968, pp. 38-44.

Consider a sorted file in main memory. There are many ways knowing its file, to look up a record in this file. The most time consuming of these is a linear search starting at the beginning of the file and looking through it until we find the record. Binary search methods are a distinct improvement, but programming is more complicated and time

consuming. Instead wouldn't it be nice if we could just take the key of the record and by applying some formula determine the exact position in core storage to find that record?

Then what is an *imperfect* formula? Well, such a formula generally takes us to the spot we desire. But once in a while we find that it takes us to a spot occupied by another record — one whose key is very close to the one that we desire.

In employing an *imperfect* transformation formula we must have some way to make up for its imperfection. What do we do when we get to the wrong spot? Morris talks about some alternatives, such as searching the neighborhood, searching linked lists, and so forth. He also discusses the transformation formulas themselves.

Above I have tried to emphasize

the importance of this technique in searching core memory. It has a similar importance when applied to disk or random access devices. Morris provides a fine review of all the work reported in literature. If you go back to the articles in his bibliography you will find Morris' presentation much better than the others. This "hashing" technique wins with tables and indexes and in some ways superior to them for quick look-up. The coverage of these topics is otherwise inadequate in the literature.

Finally, his article is well written and easy to follow.

Dr. Flores is a well-known consultant and author. His recent books include Computer Software (1965), Computer Logic (1966), and Computer Sorting (1968).

Many good articles and books are overlooked. This column is devoted to reviewing such material. If you know of any really good published works, you are invited to tell us about them.

TLW Computerworld Corner

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Lockheed Hired To Plan City's Data System

SUNNYVALE, Calif.—Burbank, an industrial and residential center of 100,000 persons in the San Fernando Valley, has selected Lockheed Missiles & Space Co. to plan a citywide computerized information system for its municipal operations. Under contract to the Office of Civil Defense, the University of Southern California performed a research study into the interdependence of city departments on common data, and Burbank was the city studied.

Real Time Monitor System
NEW YORK—A real-time system monitor has been developed for Humble Oil & Refining Co. by Programming Methods, Inc. The system operates on an IBM 360. On-line applications may be implemented in any IBM language to operate concurrently in a multiprogramming environment and support any IBM or Teletype terminals, as well as Sanders CRTs. The first two real-

CONTRACTS

time applications on the system are an inventory system for a refinery warehouse and the automation of a petroleum products testing laboratory.

Aviation Forecast

LOS ANGELES—Quinton Engineers, Ltd., has selected Planning Research Corp. to develop a forecast of aviation activities to be used as a basis for Quinton's design of the Long Beach Airport master plan. The study will determine the need for the airport complex through analyses of the factors which determine size, location, and layout of the terminal complex area, based on aircraft and passenger requirements. Economic factors will also be studied, as well as a forecast of airport activity through 1987. Stephen F. Kornish of Planning Research will head the analysis group.

Nasa Extends Contracts

EL PASO, Texas—Nasa has awarded two contract extensions to Computing and Software, Inc. for specialized data processing services at the Goddard Space Flight Center, Greenbelt, Md., and Langley Research Center, Hampton, Va. The Goddard contract provides a continuation of a 2-1/2 year agreement for on-site data systems planning, computing services, and operation of IBM 360/91, IBM 360/95, and Univac 1108 systems. The Langley contract will provide data processing services for aerospace research and vehicle simulation programs. Control Data 6600 and 6400 computers and control recording and data transcription equipment will be used at Langley.

Grant and Loan System

WASHINGTON, D.C.—The Bureau of Health Manpower, Arlington, Va., has awarded a contract to Computer Usage Development Corp. for the design and implementation of a computerized system for the Bureau's Grant and Loan System.

IS NOW				AT		WAS		AT	
Roderick E. McKilhan	Head Computer Division	Applied Logic Corp.	Manager	Electronics Associates Inc.					
Joe P. Martins	Research Associate	Piscataway, N.J.	Digital/Hybrid Programming	U.S. Air Force					
Herbert L. Banabach	Director Advanced Planning	Dikewood Corp.	Communications Officer	Northrop-Nortronics Inc.					
Frederick A. Wilhelm	Engineering Mgr.	Albuquerque, N.M.	Sales Executive	Electronic Associates Inc.					
	Large Computers	Control Data Corp.	Technical Staff						
		Minneapolis, Minn.							
T. A. Jenkins	Vice President	Honeywell Computer							
		Frammingham, Mass.							
Joseph J. Strnad	Assistant General Manager	Datal Corp.	Manager	RCA					
		San Francisco	Communication Programs	Washington, D.C.					
Lance N. Lazo	Vice President	URS Systems Corp.	Chief	Logistics					
	Consulting	San Mateo, Calif.	Doctrine and Systems	Dept. of the Army					
Charles C. French	Marketing Manager	Computer Results Corp.	Manager	Milton Bradley Co.					
		W. Springfield, Mass.	Information Systems	East Longmeadow, Mass.					
		Viastrom Computer	Vice President	Mathstronics Div.					
		System		Bany Wright Corp.					
		Burlington, Mass.							
Samuel G. Burton, III	Manager Advanced Systems Design	General Analytix Corp.	Manager, Federal Gov't.	Computer Sciences Corp.					
		New York	Information Exchange System	Los Angeles					
David S. Mathews	Vice President	Digital Seismic Corp.	Manager	Alphine Geophysical					
		Houston	Marine Seismic Operations	Associates, Houston					
David Clayman	Manager Educational Development	Viastrom Computer Systems	Consultant	Wang Laboratories					
		Corp.							
David G. Shields	Vice President	Burlington, Mass.							
		Datalogics, Inc.	Director	Gilman-Durkee Div.					
		Cleveland, Ohio	Information Processing	SCM Corp.					



R.E. McKilhan



J.J. Strnad



L.N. Lazo



C.C. French



D. Clayman



D.G. Shields

New EDP Employment Agency Opens Its First Office



WALTHAM, Mass.—Career Pats, Inc., a new company specializing in the consulting and placement of men and women in all areas of electronic data processing and computer technology, has opened its first office here.

According to William E. Donahue, the founder and president, it is the first of several offices to be opened in major cities within the next year.

Donahue was most recently vice president and director of marketing for Keydata Corp. and formerly in sales management in IBM's Data Processing Division.

Data General Plans

New Construction

HUDSON, Mass.—Data General Corp., a newly formed company, has announced plans for

construction of a building on a 15 acre site on Route 495 in Southboro, Mass., to manufacture small scale general purpose digital computers. Production is expected to begin in December of this year.

Scientific Data Moves Into New Quarters

LOS ANGELES—Administrative and programming personnel of Scientific Data Systems moved into a new 320,000 sq. ft. building in El Segundo. When fully occupied in October, the building

will house the company's administrative, marketing, programming, engineering, executive, and financial departments, totaling about 1300 employees. Construction began in 1965 on the 37-acre industrial park site. The first building was completed and occupied in October, 1966, and now functions as the company's manufacturing and systems integration facility. It houses 1600 manufacturing and engineering personnel. Two additional buildings scheduled for completion

before the end of the year will house the subassembly and peripheral equipment manufacturing groups.

Control Data Forms International Organization

MINNEAPOLIS, Minn.—An international organization has been formed within the Data Centers Division of Control Data Corporation, according to R.R. Burns, director of the firm's data centers. Leo C. Murphy, Jr. has been appointed general manager of the new organization, International Data Centers. Currently the company has seven internationally based data centers operating in Mexico City, Ottawa, Frankfurt, Stuttgart, Rome, Milan, and Melbourne.

Bank Installs Audio Response Unit

Citizens and Southern National Bank, Atlanta, has installed an IBM 7710 audio response unit and two IBM 360/40s. The system links 340 telephones in 32 branches in the Atlanta area. 1298 computer and ordered a system plan call for the installation of CRT terminals for access to records stored in the computer.

Initially, the on-line inquiry system will process only checking account inquiries. Shamrock Foods Co., a Thomas, Ark., dairy, has installed a Univac 9200 computer system for delivery this month. The system will be used for billing, accounts receivable and payable, payroll, inventory control, purchases, and general ledger work.



payroll, and accounts payable and receivable.

St. Vincent's Charity Hospital, Cleveland, has ordered a Univac 9200 computer system for delivery this month. The system will be used for billing, accounts receivable and payable, payroll, inventory control, purchases, and general ledger work.

7070/74, 7080, 7094 FOR SALE

IPS has for sale and delivery in the near future several attractively-priced IBM 7000 series systems. A 7074 10K with 7 729 VI (9K/C) tape units can be delivered January 1. Available for immediate delivery is a very reasonably-priced 7070 10K without tapes. Also for immediate delivery is a 7080 160K system without tapes. For an installation requiring a powerful scientific system, a 7094-4 with 13 729 VI's and V's is available Jan. 1, 1969. The 7094 also has a 1401 4K I/O system available as an option. Please call or write for specifications and prices.

IPS

INFORMATION PROCESSING SYSTEMS, INC.

200 WEST 87TH STREET NEW YORK, N.Y. 10019 (212) CIRCLE 8-2297

Off-Line Collection Unit Punches Out Tab Cards

A new data collection system converts source data to punch tab cards, bypassing conventional keypunching and verifying operations. The Datacon System-250 consists of a console for entering repetitive and variable data, plus a card punch. All semi-fixed data to be entered on a series of output cards is accomplished by a preset 10 column pinboard unit. Variable data is entered by positioning any of 20 leversets. Typical uses include inventory control, job costing, billing, and payroll systems. Datacon International, 15158 S. Cicero Ave., Oak Forest, Ill. 60452.

Data Rack



A new data rack, priced at \$98.95, uses the same union principle for the referral and retrieval of data processed records in nylon post binders. The sliding top can be locked for security. Hanger bars are included for adapting binders to interior slide rails. Sides and ends are steel, casters are ball bearing. The top is laminated oak grain plastic, impact and heat resistant. Wilson Jones Co., 6150 Touhy Ave., Chicago, Ill. 60648.

Punch Control



The Model 1920 punch control is designed to provide the interface for logic level control of the BRIEF punch input requirements are the data characters and a punch command. An output line for punch, busy, or low time is provided. Dig-Data Corp., 4315 Baltimore Ave., Bladensburg, Md. 20710.

Hybrid Computer

A new hybrid computer, the EAI 7800, is wired for a minimum analog/hybrid configuration but can be expanded by adding functional modules. The



EAI 7800 hybrid computer

New Products

100 volt machine is designed to go hybrid or to be used in on-line or real-time applications. The unit includes conventional patching and peripheral equipment for data reduction, readout, and recording. Users can choose computation capability from a 10 volt desk top computer to a 100 volt hybrid computing system. Electronic Associates, Inc., West Long Branch, N.J.

Datacon 250 data collection system

Card Reader



A new card reader with automatic hopper feed for 250 cards reads punch optically. The model 500-30, priced from \$900, can be supplied with Hollerith to ASCII interfacing for use with standard Teletype equipment. It is also available with the Data Phone 401 interfacing and keyboard for signaling additional data. Applications include inventory control, recording of parts, hospital billing, and machine time production information. Delivery is six to ten weeks. Vens Industries, Wyckoff, N.J. 07481.

Punch Tables

A total of 71 new faanof punch tapes for applications in data processing, communications, numerical control, photo typesetting, and computer functions have been announced by Robins Data Services. Widths are from 1 1/16" to 1". Robins Data Services, Inc., 15-58 127th St., College Point (Flushing), N.Y. 11356.

Converter

A new analog to digital converter, model IAD-1850, is designed for use with high speed data acquisition systems. The unit contains its own reference supply and "sample and hold" circuitry, and can be mounted in a standard 19" rack. Applications are radar and sonar signal processing systems; process control systems, and medical data systems. Inter-Computer Electronics, Inc., 1213 Walnut St., Lansdale, Pa. 19446.

Digital Reducing the Price Of 8/S Memory Modules

MAYNARD, Mass. - Price reductions of up to one third have been announced for memory expansion modules for Digital Equipment Corp.'s PDP-8/S computers.

Typical of the reductions, the company says, are a \$1500 cut to \$3500 for expansion from 4K to 8K, a \$1200 cut to \$2800 for expansion from 8K to 12K, and a \$1000 cut to \$2000 for expansion from 12K to 16K. Comparable reductions are in effect for expansion up to the 32K capacity of the PDP-8/S, the company said.

The PDP-8/S is a 12 bit general purpose computer priced under \$10,000 and is compatible with other PDP-8 computers, the firm said.

Western Systems Formed In Utah As Service Firm

SALT LAKE CITY, Utah - Western Systems, Inc., has been formed here to offer programming, consulting, and educational services.

Robert S. Carter, president, said that the new company will emphasize ways of improving the return on investments in human resources in the programming field.

Pearson Hunt Elected A Director of Viator

BURLINGTON, Mass. - Dr. Pearson Hunt, a Harvard University Graduate School of Business Administration professor, has been elected a director of Viator Computer Systems Corp. In announcing the election, Viator President Dr. Edward M.

\$28 Million Plum

AF Test Range Contract Renewed

VANDENBERG A.F.B., Calif. - A \$28,380,570 contract for continued operation and maintenance of the Air Force Western Test Range's technical facilities has been awarded by the Air Force to Federal Electric Corp., service associate of International Telephone and Telegraph Corp.

Robert E. Chasen, president of Federal Electric, said the one year contract gives Federal Electric the responsibility for operating and maintaining all technical facilities of the range.

Another responsibility is the

'360 Compatibility' Survey Is Offered

By a CW Staff Writer

NEW YORK - A \$500 survey service aimed at helping manufacturers enter the System 360 market has been started at Programming Sciences Corp. The survey covers hardware and software characteristics of the System 360 and provides manufacturers of peripheral devices with information on how much effort will be necessary to achieve compatibility.

In the past, details of such items as standard interface have been placed by IBM in many manuals. Gathering them together has been a major problem for the peripheral manufacturers. The new service, believed to be the first of its kind, is aimed at reducing the cost to manageable proportions.

In the hardware area, specific details of the requirements for remote and local connection and system support are provided by the service. Software details include necessary modifications to both OS and DOS, as well as information on program maintenance, documentation, and distribution.

Programming Sciences has held the Cobol maintenance contract from IBM for Cobol P and recently has produced a survey of alphanumeric CRT displays with details of their compatibility to System 360. The report originally was prepared for the Prudential Life Insurance Co. of America, PSC, which is now selling the report, recently returned most of the money paid by Prudential as a royalty fee.

Lockheed Division Changes Its Name

PLAINFIELD, N.J. - Lockheed Electronics Co. has renamed its Avionics and Industrial Products Division the Data Products Division.

"Since the Los Angeles based division is primarily a manufacturer and developer of computer memory systems, ferrite memory cores, and printed circuit boards, the new name better identifies the division," said Lockheed President A.J. Grant.

The Data Products Division supplies memory systems and components.

Bennett said that Hunt would continue to serve the company as a financial advisor and consultant.

Theodore H. Braun Elected Applied Computer Head

LOS ANGELES - Theodore H. Braun, former senior vice president of Systems Development Corp., has been elected president of Applied Computer Technology Corp.

Braun is a member of the Board of Councillors of the University of Southern California School of Engineering, former chairman of the Officers Research Committee, a member of numerous technical and management associations, and a registered professional engineer.

Charles G. Calderaro Named to New URS Post

SAN MATEO, Calif. - Charles G. Calderaro, executive vice president of URS Systems Corp., has been named additionally to the newly created position of president of URS Co., the largest operating unit within the corporation.

Calderaro joined URS in 1960, and served as vice president and general manager of the corporation's Information Sciences Division from 1962 until his promotion last year to executive vice president.

Prior to joining the company, he was deputy director of the Advanced Systems Development Division, USAF Logistics Command, San Bernardino Air Materiel Area.

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State Control of EDP Schools Varies

(Continued from Page 1)

protect the thousands of individuals, who can least afford it, from throwing away their life savings on ineffective education and the false implied promise of high paying jobs as computer programmers."

"Graduates of such schools who really have an aptitude for DP (and most do not) would find that they would qualify as a DP trainee with the state government at \$345 per month," he said. "These same people, had they attended one of our [public] vocational education schools for two years at an approximate cost of \$250 for books, would qualify for a programmer trainee position at a starting salary of \$531 per month, with a potential of \$746 per month in three years."

New York Seeks Regulation

New York, which has regulation only on a voluntary basis, was also quite outspoken on the subject of regulations.

"We definitely believe that registration and regulation should be required on a mandatory basis, not a permissive basis," said Dr. John M. Leslie, director of the Division of Special Occupational Services of the Department of Education. Unregulated schools represent unfair competition to schools which voluntarily meet state standards, he said.

"We would appreciate [receiving a copy of] your findings as a result of this survey, and we enlist your support in our efforts to revise our legislation," Leslie said.

New legislation containing regulations pertaining to advertising, methods of instruction, equipment, teacher qualifications, and solicitors was introduced in the legislature last year, but was killed in committee, Leslie said.

Out of State Problems

Maryland is fighting a problem with schools which are unable to meet the strict state regulations, open in nearby areas without

regulation, and attract Maryland students.

"Our greatest effort is spent in preventing poorly planned schools from opening," C.L. Speck, supervisor of nonpublic specialized schools, told Computerworld.

"We estimate that approximately 80% of the individuals expressing interest in opening schools in Maryland never do so," he said. "Unfortunately, many of the potential operators solve the problem by going to nearby areas which have no approval procedures and operate with very bad results."

No Cost For Approval

"Since our approval is at no cost to the school, our only interest is in good schooling and ethical business practices," he said.

Maryland was one of the few states with regulations that did not require a licensing fee.

Speck also reported that additional laws were under consideration.

"Specific minimum standards in EDP, especially programming," are needed, Speck said.

Delaware, Virginia Answer

Both Delaware and Virginia, which border on Maryland and which have no school regulation, reported that regulation is felt needed but that no regulations are currently being considered.

Virginia - which reported that two, possibly three, schools were forced to close their doors "because poor legislation lowered enrollment" - was critical of the lack of regulation.

"Schools use misleading advertising, do not give students what they need in various DP occupations, and accept unqualified students," Margaret Crumley, state supervisor of business education, told Computerworld.

But regulations are under study and are to be submitted to the legislature when it meets next in 1970, she said.

State by State Summary of Survey Results

State	Number of Schools	All State Regulation	Standards Are Established By	Enforcement Actions or Results Reported	More Control Being Considered
			Advertising Solicitation Instruction Entrance Courses		
Alaska	3	Yes	X	None	Yes
Arizona	6	Yes	X	None	Yes
California		Yes	X	Some required to improve 2 closed willingly	No
Colorado	10	Yes	X	None	No
Connecticut	15	Yes	X	None	Yes
Idaho	4	No		None	Yes
Florida		Yes	X	None	Yes
Georgia	26	No	X	None	Yes
Hawaii	6	Yes	X	None	Yes
Illinois	28	Yes	X	Improvement asked of some schools	Yes
Iowa		No		None	Yes
Kansas	8	Yes	X	None	Yes
Kentucky	7	Yes	X	None	Yes
Maryland	23	Yes	X	1 closed - see story	Yes
Massachusetts	100	No	X	None	Yes
Michigan	18	Yes	X	1 closed, others given time - see story	Yes
Minnesota	6	Yes	X	None	Yes
Mississippi	12	No		None	Yes
Missouri		No		None	Yes
Nebraska	6	Yes	X	None	Yes
Nevada	3	Yes	X	None	Yes
New Hampshire	3	No		None	No
New Jersey	40	Yes	X	None	Yes
New Mexico	3	Yes	X	None	Yes
New York		Yes		None	Yes
Ohio		No		None	Yes
Oklahoma	11	No		None	No
Oregon	1	Yes	X	None	No
Pennsylvania	50	Yes	X	None	Yes
Rhode Island	6	Yes	X	None	Yes
S. Carolina		Yes	X	None	Yes
S. Dakota	0	Yes	X	None	Yes
Tennessee	12	Yes	X	None	Yes
Texas	36	No		None	Yes
Vermont	2	No		None	Yes
Virginia	10	No		None	Yes
Washington		Yes	X	None	Yes
Wisconsin	7	Yes	X	None	Yes
Wyoming		Yes	X	None	Yes

1: Only if training veterans and children of veterans under Title 38 U.S. Code; 2: Only if veteran or war orphan benefits applied for; 3: Regulation only; 4: Voluntary self regulation; 5: Only if solicitors used; 6: In some cases, the number of schools is estimated; 7: In some cases, officials have been unwilling to commit themselves on this question.

(Brackets indicate either that the question was unanswered, did not apply, or information was not available.)

Computer Industry Seen Helping Poor

LOS ANGELES - The computer industry holds greater promise than any other in the upgrading of the skills and earning power of the underemployed, Robert W. Sarnoff, president of RCA, said last week.

Those seeking employment in the computer industry will find no preconceptions or insurmountable barriers to be overcome, Sarnoff said at the dedication of RCA's new Information Systems Center here. "It is truly a field of equal employment opportunity."

He noted that computer skills are now being taught not only to high school and college students, but also to youngsters in reform school, adults in prison, and underprivileged residents of the urban ghetto.

Widespread Use Foreseen

Predicting that the computer's everyday use in the home will become commonplace before the end of the 1970's, Sarnoff said when this happens "the number

of job openings should rival those in television."

He said the computer ultimately will become a device for widespread personal use comparable with the telephone.

"Properly used," Sarnoff added, "the computer is an instrument to serve society and to provide a means to enable it, to advance human

goals, to give men and communities new scope for growth and new horizons for progress."

The new Information Systems Center contains advanced computer equipment to serve the data processing needs of RCA's divisions and plants and to provide backup support for its customers and prospects on the West Coast.

CALENDAR

SMTWTFSMTWTFSMTWTFSMTWTFS
Oct. 6-10, Montreal, Canada - 10th Annual EDP Conference and Retail Research Institute. Contact: Ethel Langtry, National Retail Merchants Assn., 100 W. 31st St., New York, N.Y. 10001.
Oct. 14-16, New Orleans, La. - Fourth Annual Meeting of Edo. Contact: Richard A. Conaway, Dir. of Data Processing, Hillcrest Medical Center, 11203 S. Utica Ave., Tulsa, Okla. 74104.
Oct. 20-23, St. Louis, Mo. - Systems and Procedures Assn. International Systems Meeting. Contact: Richard L. Irwin, SFA, 24587 Bayley Rd., Cleveland, Ohio 44128.
Oct. 21-23, Newport Beach, Calif. - Swap-Coop-Scope Joint Conference. Contact: James Hatch, Swap, Saginaw Steering Gear Div., G.M.C., 3900 Holland Rd., Saginaw, Mich. 48605.
Oct. 22-23, Washington, D.C. - First Annual Law of Software Conference. Contact: Computers-Law Institute, The George Washington University, Bacon Hall, 2000 H St., N.W., Washington, D.C. 20006.

The computer room at the new Control Data Institute in Burlington, Mass., is in sharp contrast to some of the storefront schools that have opened.

Mill Automated From Order to Delivery

TOKYO — A system for computer control of steel sheet production from acceptance of orders to production, shipment, and delivery has been introduced by Nippon Kokan K. K., a leading Japanese steelmaker, at its Mizus Works near here.

The new system will make possible cost savings of approximately \$833,000 a year, dramatically shorten delivery time, reduce inventory, and increase man hour efficiency at Mizus Works, the company said.

The operation is part of an NKK program to automate all its steelmaking facilities. Principal equipment includes large, medium, and small computers as well as on-line terminal devices.

Production Scheduling

Orders received from customers are fed into an IBM 360/50 which then computes weekly Mizus production schedules. Based on weekly production capacity determined from general order data, production schedules, and processing status of individual orders, the computer then prepares processing schedules by calculating the various, complex technical aspects of processing.

Simultaneously, to achieve the most economical processing which embodies product quality, yield, and processing efficiency, the computer prepares processing instructions and optimum equipment utilization schedules.

Real-Time Control

Sixteen terminals, installed throughout the mill, are integrated in an on-line system with the computers in the Mizus Production Control Center. Data on coil cards which flows parallel to the processing line is transmitted to the control center on a real-time basis.

Data collected at the control center is processed by computers including GE-55, E4000 and others. These prepare data for overall processing controls and provide information on the processing status of individual orders. As a result, it is possible to determine any work flow imbalance among the processing points and to achieve early identification of any substandard material.



The data collector, right, is one of 16 units at key processing points on the sheet steel production line at the Mizus Works of Nippon Kokan.

Processing control is greatly improved by feedback of rescheduling and other instructions by diversion of products and materials to other processing points to adjust for workload imbalance and to effect reclassification of materials and products as required. The system also improves customer service by accelerating accurate re-

sponses to order inquiries.

An IBM 360/20 processes information on product quality, production statistics, and other data, eliminating time consuming, manual calculations required for order entry and processing and status reports on individual orders.

Donnelly Installs Fast CRT Typesetter

CHICAGO — A computer operated typesetting system which can produce complete pages in 10 seconds or less has been put into operation at R.R. Donnelley & Sons Co., which calls itself the world's largest commercial printer.

The new character generating system centers around an RCA Videocomp 832 electronic composing machine which sets type on film ready for plate making at 1000 or more characters a second.

"We have coined the term 'Electronic Graphics' to describe the merger of computer technology and typographical skills," said Charles W. Lake, Jr., president of Donnelley. "Our new system is the first of an advanced design and at present the only one of its kind 'on stream' in the world. It provides us with the ability to set type at computer speeds and has unique advantages for users with existing computer data banks. It is ideally suited to parts and price lists, directories, and other large volume typesetting requirements which are periodically updated and reissued."

"Since a computer file is required for

input, we expect — with the present state of the art — to use electronic composition primarily for projects which can utilize existing data banks or which justify development of such a file. We anticipate that this technology will provide increased markets for other Donnelley services including conventional composition," Lake said.

Early Projects

Typesetting for the September 1968 edition of Dun & Bradstreet's Reference Books, consisting of 2,400,000 separate listings, was generated by Donnelley's new system. These listings are used to make up and print 17 national and regional volumes for that edition. Subsequent editions of this bi-monthly reference guide will also be generated on the Videocomp.

In another application, the Official Airline Guide, previously reproduced from a computer printout, is now being composed on Donnelley's new electronic character generating system, utilizing OAG's existing computer data bank. The flexibility of type selection makes it possible to produce the same information in fewer pages. The ability to produce bold face headings and make other type selections also improves readability of the finished product.

System Operation

The Videocomp operates by magnetic tape. Input tape is combined with coded graphic arts instructions which determine the form and arrangement of the page, size and style of type, spacing, and other aesthetic requirements.

A selection of type sizes and styles is available. Different sizes and styles may be intermixed electronically, on the same line if desired. Type is generated in column form or as complete pages including running heads, folios, footnotes, and footlines.

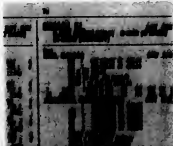
"The type is set in line lengths up to 9" and in sizes from 4 to 24 points. The characters can be altered electronically to slant,

extend, condense, or form other variations as required by the text.

More than 1000 characters a second are produced at reproduction quality levels. Speeds up to 4000 characters a second can be generated at quality levels adequate for proofreading purposes.

The character generator works much like a television set.

The coded magnetic tape requests an individual letter in a specific size and style. The control computer interprets this request, determines the character location in memory and sends the proper electronic signals to the CRT to form the character. This image is then projected through a lens onto photographic film or paper.



A sample of type set by the Videocomp system.

Computers Help Search for Oil

SHREVEPORT, La. — Computers are helping researchers probe the bottom of the sea in a world-wide search for oil.

The computers are used by Western Geophysical Co. to produce cross sections of the earth's layers to help experts locate underwater oil deposits.

Western Geophysical, a division of Litton Industries, provides a complete oil exploration service to the international petroleum industry from offices in Shreveport, Los Angeles, Houston, London, England, and Milan, Italy.

Data used to produce these seismic sections is gathered by nearly a score of marine crews in Western's fleet. At sea, complex mechanical devices produce underwater sound waves which penetrate deeply into the ocean floor, bounce back, and are picked up by a cable containing sensing devices.

The reflected sounds are recorded on magnetic tape as a series of digits and later analyzed by the computers to determine the kind of earth layers below the sea. The cross sections are given to oil company geologists who decide where to drill.

Western's navy — the largest ocean-

graphic fleet in the world — explores thousands of miles each month. Using a similar probing technique, the company's land crews cover thousands of additional miles.

25,000 Miles of Tape

"As a result of our land-sea explorations, we use enough magnetic recording tape to encircle the earth every nine months," said Carl H. Savit, vice president for research and development.

Later this year, Western Geophysical will install a new device — the IBM 2938 Array Processor. Western, which refers to the device as Sam (Seismic Array Manipulator), will then be able to "see" many more details of the rock layers under the earth and will speed up its whole electronic process.

"Sam will help us filter out many unwanted sounds recorded on the tape, such as the roar of wind and wave and the churning of the ships' propellers. We will then be able to provide our clients with more detailed charts of the earth beneath the bottom of the sea," Savit said.

Western uses six IBM 360/44s to process its data.

Completed page comes out of the character generator ready for plate making.

System Maintains Personnel Records

By a CW Staff Writer

LOS ANGELES—A Cobol program currently running under IBM 360 DOS or OS and designed to automate the maintenance of personnel records is under test by Computer Sciences Corp. At a large Pacific Coast bank. The system, called the Personnel Management Information System (PMI), uses an "English" language shorthand such as "age GE 50, and salary GE 500, and salary LE 1000" to code requests for specific information. (The request quoted would obtain a list from the file of those who are 50 years old earning between \$500 and \$1000 per month.)

PMI maintains a Personnel Information Document, a single file which incorporates all of the key elements of an employee's history with a company. Whenever a change is made in an employee's status, such as a pay increase, the system automatically updates the employee's Personnel Information Document to reflect the change.

Security Precautions

Information considered confidential by management is automatically withheld from routine reports. A special request code known only to authorized managers must be used to obtain such confidential data.

PMI generates reports in the general areas of employee records, compensation, benefits, and manpower distribution. Specific reports include lists of benefits arranged by benefits and by employees, turnover, salary increase analysis, and compensation planning. A Position Authorization Controls Report lists job classes, indicating classes in which there are vacancies or manpower surplus.

PMI is priced at \$25,000.

Inventory Control System Spots Incipient Problems



Melvin Schneider, Martin-Brower president, shows off some of the firm's bags and containers.

By a CW Staff Writer

CHICAGO—A Honeywell software product designed to maintain inventory management has been running successfully here for the past nine months. Called Profit, it has come up to the expectations of the user, Martin-Brower, which supplies custom designed bags to major fast food franchises across the nation from 10 regional warehouses. It has been able to handle a number of instances where the requirements for a given product varied 100% up and down from one week to the next, or even from day to day, particularly when weather changes occurred.

At Martin-Brower, each warehouse is responsible for the customers in its area and deals with each franchise outlet on an individual basis so that although there are comparatively few franchises involved, the effect is that there are many customers—currently about 10,000. The Profit system reviews previous demand for each item in 5000 item inventory, estimates upcoming demand, reports on the status (flagging items that are on the critical list, and checks on the accuracy of previous forecasts.

Since the system was implemented in January, the most valuable part of the service has been

found to be the early warning system.

"The computer says we'll need two million paper bags in June for a customer serving us for Los Angeles warehouse," said Melvin Schneider, Martin-Brower president. "The bags are scheduled to be on hand when they are needed. But about half way through the month, the computer notes the demand is a lot higher, than the forecast. Maybe there's a change in the weather that the computer didn't know about. So the computer throws up a warning alert. Now we know that the forecast is breaking down and if we stick with it we probably won't have enough bags. We check with the branch, find out the weather change, and boost our order for that branch."

Sometimes the product demand defies reason; ice cream sales often dip sharply when the weather is hot. There are consistencies, too. Demand is more constant at the Los Angeles warehouse where the year-around weather is fairly uniform. On the other hand, the warehouse in Woodbridge, N.J. is subject to widely swinging demands. Shipments were very high this April, for example, when the East Coast basked under warm weather after a rainy March.

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Dominant Group at SJCC Represented Business DP

By a CW Staff Writer

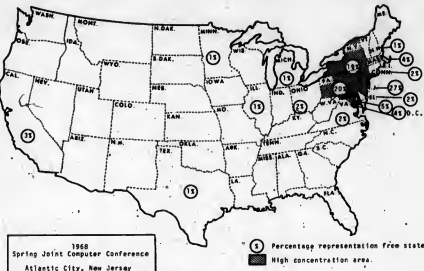
NEW YORK — A study of the 15,000 people who attended the Spring Joint Computer Conference at Atlantic City, N.J., this year has yielded some surprising results. For the first time it attracted more people in business data processing than in scientific operations. Percentage figures, taken from a mail survey, show that interest in business and scientific data processing was almost the exact reverse of that at previous Spring Joints, with 34% now business oriented, as against a previous 27%, and 27% scientific oriented, as against the previous 35%.

The change, which may have occurred primarily because of the increased number of visitors (14,000 as against 10,000 for the previous year), also shows in the average number of exhibits visited (19 after a steady increase from 11 in 1966). Even so, the average was not too high as for the normal show goer who, in 1968, is expected to visit 24 stands.

The attendees were mostly members of ACM or IEEE. ACM contributed 26% of the attendance, primarily from the Northeast.

An estimated 60% of the visitors came from New Jersey, New York, and Pennsylvania. Outside that vicinity, only California produced a reasonable representation (3%) of visitors (see map).

Not many of the attendees had been to any of the previous Spring or Fall Joints, and it was estimated that if the same exhibit had been used in the last four consecutive years, only about 30% of the audience would have seen it before. As in previous years, the main interest (82%) seemed to be in the peripheral area.



Geographical Distribution of visitors to the SJCC, based on a sample of 873.

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COMPUTERWORLD

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Bootho Settles Law Suit; Retains Use of Name

SAN FRANCISCO—Bootho Computer Corp. and its related companies have reached an agreement to continue using the Bootho name in return for an undisclosed consideration to be paid by Bootho to Greyhound Corp. in Chicago.

The agreement was part of an out of court settlement of a \$10 million damage suit filed against Bootho by Greyhound. Full details were not disclosed.

The suit, filed in an Illinois state court last fall, charged D.P. Bootho, Jr., and others, with misconduct in trying to lure customers and employees away from Greyhound. The suit also sought to prevent the use of the "Bootho" name in the leasing business by the defendants.

Bootho, who once headed Greyhound's computer leasing operations, left Greyhound in 1967, to found Bootho Computer.

SEC to Start Hearings on Oct. 8 On Charges Against Merrill Lynch

WASHINGTON, D.C.—The Securities and Exchange Commission has set Oct. 8 as the date that it will start administrative proceedings on staff charges against Merrill Lynch, Pierce, Fenner & Smith Inc. and others. They are accused of violating federal securities laws by trading in Douglas Aircraft Corp. stock while in the possession of sensitive information about declining earnings.

The firms and individuals involved have denied any wrongdoing.

The proceedings will start in New York with a prehearing briefing "to clarify and simplify issues by consent of the parties." The SEC said it will disclose "in reasonable detail the basis of its allegations and the nature of its proof" at the conference.

Amex Fact Booklet Is Published

NEW YORK—The American Stock Exchange has published a booklet entitled *Amex Data Book*—the first comprehensive statistical profile of the exchange. The 64 page report details the administrative and financial structure of the exchange and supplies detailed statistics on membership, market data, services, commission rates, the stock

list, and trading volume ranging back to the 1920s and 1930s. Thirty charts—especially prepared for the edition—illustrate key segments of the tables and text.

Copies of the booklet can be obtained from the exchange's information Service, 56 Trinity Place, for \$1 each.

New Registrations

BRANDON APPLIED SYSTEMS, INC., 30 E. 42nd St., New York, a company providing a variety of services to users of electronic data processing equipment, filed to register 104,759 common shares, to be offered for subscription by stockholders at the rate of one share for each four held. Proceeds, at a maximum of \$15 per share, to be used for equipment and debt repayment. The underwriter is Gregory & Sons, 40 Wall St., New York.

DATASCAN, INC., 1111 Paulson Ave., Clifton, N.J., an electronic equipment and subassembly manufacturer, filed to register 105,000 common shares, 50,000 to be offered by the company and 25,000 by selling stockholders. Proceeds, at a maximum of \$10 per share, to be used for debt repayment, expansion, and working capital. The underwriter is New York Securities Co., 52 Wall St., New York.

DEARBORN COMPUTER CORP., 180 W. Monroe St., Chicago, Ill., a computer leaser, filed to register 112,531 shares of convertible subordinated debentures due in 1968 and 175,624 common shares, 50,000 to be offered by the company and 125,624 by selling stockholders. Proceeds, with the price to be set, to be used for equipment and possible acquisitions. The underwriters are Ladenburg, Thalmann & Co., 25 Broad St., New York, N.Y., and Oppenheimer & Co., 55 Nassau Square, New York.

FOOT-MEM, INC., 2 Mary St., Rte. 1, Natick, Mass., a photo-optical systems manufacturer, filed to register 150,000 common shares. Proceeds, at \$8 per share, to be used for working capital. No underwriter.

LMC DATA, INC., 116 E. 27th St., New York, a new data processing equipment leaser, filed to register \$4 million of convertible subordinated debentures due in 1983. Proceeds, at \$500 per debenture, are to be used for expansion, debt repayment, and equipment. The underwriter is Myron A. Lerner & Co., 47 Broad St., New York.

SCIENTIFIC CONTROL CORP., 14008 Distribution Way, Dallas, a manufacturer of general purpose computers and data processing equipment, filed to register 382,000 common shares, 182,000 to be offered by the company and 200,000 by selling stockholders. Proceeds, with the price to be set, to be used for working capital. The underwriters are H.L. Fadenham & Co., 50 Broadway, New York, and Kleiner, Ball & Co., 9756 Wilshire Blvd., Beverly Hills.

Computing & Software Inc. To Buy Manufacturing Unit

LOS ANGELES—Computing & Software Inc. has announced its move into the computer equipment manufacturing field with the signing of a definitive agreement to purchase Troy Computer Products Inc. in Santa Ana for stock valued at about \$4 million.

Troy manufactures data terminals, notably high speed printers, and allied products. Computing & Software is involved in the management of computer centers, computer programming, and data processing personnel training.

Computing & Software also announced net income for the nine fiscal months ended July 31 for itself and its subsidiaries was \$1,09,000 (86 cents a share, 32% from \$839,000 (67 cents a share) for the comparable period a year ago. The 10% federal income tax surcharge reduced earnings by \$72,000 (6 cents a share), the company said.

Total revenues for the period

were \$23,812,000, compared with \$19,420,000 (restated) to include companies acquired subsequently on a pooling of interests basis for the preceding period, it said.

The company also said that

early in the current fiscal quarter net earnings in consumer electronic servicing in order to concentrate its efforts on computer related operations and information processing.

Leasco Tender Bid Lands Most of Reliance's Stock

GREAT NECK, N.Y.—Leasco Data Processing Equipment Corp. has received "more than 90%" of the stock of Reliance Insurance Co. in Philadelphia in its tender bid that expires Sept. 30, according to Leasco's Frederick Jackson.

Jackson refused to give *Computerworld* further details. The tender offer, which originally was scheduled to end Sept. 10, but was extended for 20 days, Leasco said that it had obtained "substantially more than 51%" of Reliance's outstanding common stock before Sept. 10.

Reliance management originally opposed the planned takeover, but later dropped open opposition in favor of taking no public stand. However, Reliance refused to provide any information about itself for a Leasco prospectus.

Acquisitions

Cornell Aeronautical Lab Sold to EDP Technology

ITHACA, N.Y.—Cornell University has agreed to sell Cornell Aeronautical Laboratory, its applied research center in Buffalo, to EDP Technology, Inc., of Philadelphia, D.C., for \$25 million.

Cornell said that the laboratory—with a staff of 1600 scientists, engineers, and support personnel—has contracts aggregating \$32 million a year in aeronautics, electronics, applied sciences for government and industry.

Leasco Plans to Acquire Information Development

GREAT NECK, N.Y.—Leasco Data Processing Equipment Corp. has reached an agreement to acquire the assets of Information Development Co., a Los Angeles, Calif., headquartered computer software company, for 20,000 shares of Leasco common stock. IDC does work relating to the general and special purpose needs of the small computer field.

Tentative Accord Reached On Two Brandon Purchases

NEW YORK—Brandon Applied Sciences has agreed in principle to purchase Federated Printing Co., Inc. and Federated Manufacturing Corp., both also located here. Terms were not disclosed.

Management Data Centers Buys 2 Los Angeles Firms

DALLAS—Management Data Centers, Inc., a data processing and consulting firm, has announced two acquisitions in Los Angeles. Terms were not disclosed for either.

One acquisition involved Action On-Line, a company specializing in real-time on-line systems for the distribution industries. The company will continue to operate under its own name without change in management, MDC said.

The other purchase involved Computab, Inc., a general line computing organization with specialties for medical clinics and mortgage companies.

Coburn Corp. To Acquire Time Sharing Services

ROCKVILLE, CENTRE, N.Y.—Coburn Corp. of America has agreed to acquire all assets, subject to liabilities, of Time Sharing Services, Inc. in Beverly Hills, Calif., for an undisclosed amount of Coburn common stock.

Time Sharing Services will become an operating unit of Computer Methods Corp., a Coburn subsidiary, the announcement said.

Datamation Systems Plans To Buy W.R. Simmons

NEW YORK—Datamation Systems, Inc. has agreed in principle to acquire W.R. Simmons & Associates Research Inc., a media research consulting firm, for 150,000 shares of common stock valued at about \$5 million. The transaction is subject to the approval of the Datamation board and the completion of satisfactory audits, Datamation said.

Microform Data Systems Buys MicroVue System

CUPERTINO, Calif.—Microform Data Systems, Inc. has purchased the patents, data, and related facilities comprising the MicroVue System from the Republic Aviation Division of Fairchild Hiller Corp.

In addition to producing and marketing MicroVue ultrathin, capable of reproducing more than 10,000 standard size pages of printed material and graphics on a single 4" x 6" ultrathin film card, Microform plans to manufacture and market a family of random access readers that can select and display full size from a cardstock ultrathin any one of 200,000 pages.

NN Corp. Buys Executive Computer Leasing Inc.

MILWAUKEE, Wis.—NN Corp. has acquired Executive Computer Leasing Inc. in Oakbrook, Ill., for an undisclosed amount of cash.

NN is a holding company formed by Northwestern National Insurance Co. ECL is a data processing consulting firm.

Speer Merger Completed

RUTHERFORD, N.J.—Beetson, Dickinson and Associates announced the completion of the acquisition of Spear, Inc. in Waltham, Mass. Terms were not disclosed.

Information Plans to Buy Computing Technology Inc.

SHERMAN OAKS, Calif.—Information Inc. has agreed in principle to acquire Computing Technology Inc. in Paramus, N.Y., for 3900 shares of Informatics stock. The merger is subject to approval by the boards of both companies, CTI stockholders, and regulatory agencies.

CTI is engaged primarily in non-government computer software work.

Earnings Reports

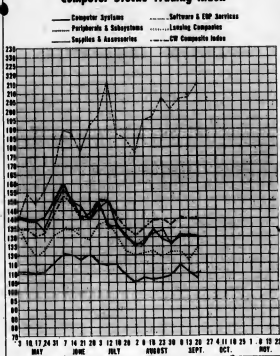
DATRONIC RENTAL

CHICAGO—Datronix Rental Corp. has announced that net income for the fiscal year ended June 30 was up 149% to \$173,289 (17 cents a share) from revenue up 355% to \$1,404,873.

OPTICAL SCANNING

NEWTOWN, Pa.—Optical Scanning Corp. has reported gross revenues of \$5,261,000, 111%, and earnings of \$583,700 (51.12 cents a share), for the fiscal year ended June 30.

Computer Stocks Trading Index



Composite Up, But Manufacturing Off

The Computerworld Composite Stock Index rose a point to 141 for the week ended Sept. 30, as the stock market reversed a one week decline to close up.

The Dow-Jones Industrial average closed at 924.42, up 7.21 points (0.8%); the Standard and Poor's industrial average, 110.94, up 0.96 (0.87%); the New York Stock Exchange composite average, 57.03, up 0.53 (0.94%); the American Stock Exchange price index, 329.96, up 31 cents (0.1%); and the N.Y.B. over-the-counter industrial average, 414.28, up 2.94 (0.71%).

Volume for the week on the NYSE was 59,111,130 shares, up from 51,045,030 shares the previous week. Volume on the AMSE was 28,665,905 shares, up from 25,400,015.

No Computerworld listed stocks were on the NYSE's 20 most active list.

8 New Highs

Eight Computerworld listed stocks closed at new highs for the year. None closed at new lows.

Burroughs closed at 232, up 5-1/8 (2.48%); for a second consecutive high; Wabash Magnetics, 23-1/8, up 2-1/4 (10.77%); Brandon Applied Sciences, 21, up 3 (16.61%); Computer Exchange, 23, up 2 (9.52%); Leasat, 110, up 18 (19.56%); and System Capital, 64-1/2, up 17 (27.22%).

Among the Computerworld listed stocks, 50 issues closed up, 43 closed down, and six remained unchanged. The previous week, 39 were up, 49 down, and seven unchanged.

Overall on the NYSE, 977 issues advanced, 595 declined, and 123 remained the same, versus the previous week's 803 gains, 729 declines, and 142 unchanged. New highs were reached by 232 issues and 21 dropped to new

lows, as against the previous week's score of 176 new highs and 29 new lows.

CW Indexes Mixed

The five Computerworld sector indexes showed mixed activity again, with two up and three down.

The Computer System Index reversed a two week gaining period to close at 129, down 2 points (1.53%). The sector has been generally declining, with occasional brief upward movements, since a high for the year May 7.

The Peripherals & Subsystems index also reversed a brief upward trend, closing at 130, down 1 point (0.8%). The index has been generally improving the Computer System Index.

Closing down 4 points (3.7%) at 108 was the Supplies & Accessories index.

The Software & ERP Services index closed up 7 points (3.34%) at 215.

The Leasing index was up 6 points (5.9%) to 124.

Commentary

According to some sources, the Dow-Jones industrial average, which closed slightly under the 1968 high of 924.98 at Sept. 9, might reverse a historical trend of September declines and close up. The market has a good head of steam on, and the Commerce Department has recently announced that new factory orders for durable goods rose in August and predicted a rise in the gross national product for the current quarter.

In addition, personal income advanced in August and credit conditions have been generally easing, pumping more money into the economy.

COMPUTER STOCKS: TRADING SUMMARY

WEEK ENDED SEPT. 27, 1968

EXCHANGE	BASE PRICE 3-1-68	1968 CLOSING RANGE	PRICE	COMPUTER SYSTEMS	WEEK NET WEEK % CHANGE CHANGE CHANGE FROM BASE
NYSE	183 3/8	232-187	232 1/2	Burroughs	+ 5 7/8 + 2.48 + 42.00
NYSE	67 3/4	110-84	82 1/2	Control Data	- 2 1/4 - 3.6 - 2.94
NYSE	101 1/4	174-84	120 1/2	Digital Equipment	+ 3 1/2 + 2.80 + 29.00
NYSE	102	160-88	120 1/2	General Electric	- 1/8 - 0.12 - 1.29
NYSE	67 1/4	100-81	86 1/2	IBM	- 3/8 - 0.49 - 31.45
NYSE	90	93-89	79 7/8	International Business Machines	- 1/8 - 0.12 - 1.47
NYSE	63 1/8	144-89	121	Raytheon	+ 1 7/8 + 1.56 + 30.00
NYSE	88 1/8	174-88	130 5/8	Scientific Controls Corp.	+ 3/4 + 1.25 + 13.93
NYSE	44 7/8	74-48	62 1/2	Sperry Rand	+ 4 1/4 + 10.98 + 13.73
NYSE	39 1/8	63-34	44 1/2	System Engineering Lab.	- 1/8 - 0.25 - 2.70
NYSE	22 1/2	66-20	42 1/2	Univ. Systems	- 1/8 - 0.25 - 2.70
NYSE	78 3/4	114-72	85 1/4	Wabash Magnetics	- 1/8 - 0.25 - 2.70
NYSE	48	63-42	42 1/2	Wabash Magnetics	- 1/8 - 0.25 - 2.70
NYSE	22 1/2	39-20	29 3/8	Wabash Magnetics	- 1/8 - 0.25 - 2.70
EXCHANGE	BASE PRICE 3-1-68	1968 CLOSING RANGE	PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET WEEK % CHANGE CHANGE CHANGE FROM BASE
NYSE	85 3/8	91-82	88 7/8	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	21	88-49	81 1/8	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	29	87-26	34 5/8	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	17 1/4	18-12	12 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	13 1/2	20-12	16 7/8	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	32 3/8	36-27	30 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	24 1/2	49-20	30 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	12	17-10	17 1/4	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	18 1/4	21-13	21 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	18 1/4	27-16	19 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	38	37-32	32 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	19	28-18	20 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	34	71-58	68	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	12	12-12	12 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	16 7/8	17-14	15	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	67 1/2	108-54	74 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	138 1/2	138-71	138 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	18	42-34	34 3/4	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	25 1/8	30-20	25 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	40 1/4	99-38	84	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	16	29-14	34 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	48 1/8	58-48	58 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	47	159-83	85	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	68 1/2	81-72	78 1/2	Adaptec	+ 1/4 + 0.52 + 27.18
NYSE	242 1/4	251-229	249 1/4	Adaptec	+ 1/4 + 0.52 + 27.18
EXCHANGE	BASE PRICE 3-1-68	1968 CLOSING RANGE	PRICE	SUPPLIES & ACCESSORIES	WEEK NET WEEK % CHANGE CHANGE CHANGE FROM BASE
NYSE	48 1/2	64-37	44	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	20 1/2	32-19	21 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	13 1/8	13-10	12 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	27	44-20	23	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	26	31-26	26 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	27 1/4	38-26	33	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	66 1/8	118-81	108 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	27 1/4	124-88	98 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	27 1/4	124-88	98 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	11 1/4	20-10	10 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	34 1/2	35-24	27 3/4	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	27 1/4	31-24	27 1/4	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	14 1/4	23-13	23 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
NYSE	28 1/4	36-24	29 1/2	Acme Video	+ 1/4 + 0.52 + 27.18
EXCHANGE	BASE PRICE 3-1-68	1968 CLOSING RANGE	PRICE	SOFTWARE & ERP SERVICES	WEEK NET WEEK % CHANGE CHANGE CHANGE FROM BASE
NYSE	7 1/8	29-17	14 1/4	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	17	23-14	23 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	18 1/2	23-14	23 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	47	60-42	63 1/8	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	4	19-14	14 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	4 1/2	11-7	11	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	22 7/8	43-20	20 3/4	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	9	13-7	13 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	30	62-24	62	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	40	64-36	60 3/4	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	22 1/2	39-19	20 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	36 1/2	61-26	60 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	22 1/2	39-19	20 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	12 1/2	39-19	20 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	86 1/8	92-88	89 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	12	12-12	12 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	11 1/2	18-14	18 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	11 1/2	18-14	18 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	31	45-28	42	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	44	44-14	44	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	8	8-8	8 1/4	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	40 1/2	52-32	42 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	10	12-8	12 1/2	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	63	104-87	106	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	44	44-44	44	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	44	44-44	44	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
NYSE	44	44-44	44	Advanced Computer Techniques	- 1/8 - 12.60 - 90.00
EXCHANGE	BASE PRICE 3-1-68	1968 CLOSING RANGE	PRICE	LEASING COMPANIES	WEEK NET WEEK % CHANGE CHANGE CHANGE FROM BASE
NYSE	18	24-18	18	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	19 1/4	24-18	18	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	19 1/4	24-18	18	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	12 1/4	24-18	18	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	12 1/4	24-18	18	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	106 1/8	104-88	106 3/8	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	12 1/2	17-17	17 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	20	20-20	20	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	13 1/4	19-12	17 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	28 3/4	28-28	28 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	28 3/4	28-28	28 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	28 3/4	28-28	28 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	48	110-41	110 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	8	8-8	8	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	30 3/4	33-27	31 1/4	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	10 1/2	12-8	12 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	10 1/2	12-8	12 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	41 1/8	43-38	42	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	41 1/8	43-38	42	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	10 1/2	12-8	12 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	10 1/2	12-8	12 1/2	Acme Video	- 1/8 - 12.60 - 90.00
NYSE	10 1/2	12-8	12 1/2	Acme Video	- 1/8 - 12.60 - 90.00

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Taxpayers Demand County Implement 'Fail-Safe' System

(Continued from Page 1)

argue strongly that it is the user of the equipment, not the vendor, who is responsible for the results of its operation or malfunction; and that the user should provide adequate fail-safe backup systems to ensure the proper operation of the whole.

In this they also cite the use of other advanced technologies, such as radar, as being in some ways analogous to the use of computers.

Errors Persist

The computer errors involved appear to have been quite persistent. Mrs. Janet Lawson apparently had to receive emergency aid because of what the Department of Public Social Services described as "computer malfunctions." These lasted in her case from January until it was corrected in May this year.

In some cases it appears that attempts to correct errors themselves misfired. Mrs. Stearns, a divorcee whose husband is paying \$80 a month towards her support, was involved in such a case where a correction for a "computer malfunction" which occurred on April 1 was attempted by faxing in a fictitious "termination of aid" notice for April 30 and a "reopening of aid" note for May 1. The procedure apparently did not work and the May check was not issued. An inquiry was unable to determine quite why the procedure had not worked. Mrs. Stearns, however, did not have it happen month after month because she obtained employment later in May.

Errors Cause Two Moves

One of the worst cases cited by the plaintiffs concerned a Mrs. Wilda J. Consey, who with her three children was evicted last November from her house for nonpayment of rent. At the time there was allegedly over \$513.50 due to her, which had accrued since the beginning of September. The reason it had not been paid, according to her case worker, was

that "the new computer did not pick up your case."

Later the computer, according to the case worker, also failed to pick up her change of address, and as a result it was not until January that a payment due on Sept. 15 reached her.

Even after this was cleared up, further problems were in store.

Prompt Payment Mandatory?

The legal basis for the suit lies in the assertion that once a welfare recipient has been accepted for aid, then aid must be paid promptly. In California, great stress is laid on welfare recipients budgeting properly, and the plaintiffs point out that they never know when checks will arrive in a condition that they can be cashed.

According to the claim, for the first three months of operations the system was in error between 65% and 80% of the time. After the third month the error percentage, they say, dropped to between 10% and 25% of the time, where it now is.

W.H. Giesbrecht, financial coordinator of the Administrative Data Processing Department of the University of Southern California, gave his opinion that such an error rate in checks actually mailed is so high as virtually to compel an inference that the computerized system has been improperly, incompletely, or negligently implemented.

He said the university's computer system had an error rate of only 0.1%.

Meetings

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Conference Set On Management, Technical Topics

Special to Computerworld

MANCHESTER, N.H. — A Friday afternoon and Saturday morning conference covering both managerial and technical areas is being sponsored here Oct. 4-5 by DPMA Division 14 for members and nonmembers.

The keynote speaker, Roderick R. Richards, is expected to urge more recognition of the difference between data processing functions and systems and procedures operations. Richards preaches the philosophy of what he calls "the separation of Church and State" in the data processing field and feels that his functions are separate from those of the systems area.

Management

General management problems both upwards and downwards in the corporation will come under scrutiny at the conference: upwards when Prof. Leon Liebman of the MIT Sloan School of Management talks on the communication problem between management and the data processing function, and downwards when Malcolm Smith of Honeywell talks about performance evaluation for programmers.

Checklist Society

The conference also will include a number of technical items, with discussions on data collection, data communications, and optical character recognition. Data Reintegrated, formerly automation director for the American Bankers Association, will discuss the Checklist Society — and whether it is a promise or a threat. Sandwiched between the sessions on Friday evening will be some entertainment including one act which has been making a national tour of the Playboy clubs.

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CRT Controller Has Digital Computer

NEW YORK — Univac has announced an "intelligent" graphic terminal and controller designed to reduce the load on the central processor during use. The controller, Model 1557, contains a small computer with an 8 or 16K memory of 18 bit words which helps local operations on up to three Model 1558 terminals. Backing up the controller when necessary is another computer, usually a Univac 1108, operating in multiprogramming mode. Other systems can be used, according to Univac. The 1557/1558 combination markets at \$195,000 to \$350,000, depending on the number of terminals and the options on the controller. Delivery of the hardware is approximately nine months. The first units already have been shipped.

1024 X 1024 Grid

The amount of information available on the screen is strided by Univac. The unit has a 1024 by 1024 grid and provides two intensity levels so that background and foreground information can be differentiated. Lines can be automatically dashed, or displayed with an intensified end point for easier reading. The dashed line can be used for such things as showing which lines cannot be seen under normal circumstances when the image of a three dimensional object is rotated.

Three Dimensional Uses

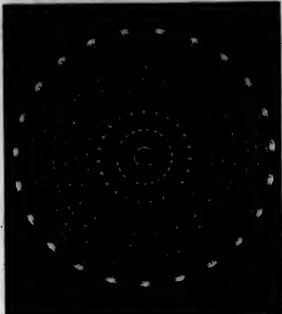
The use of displays for viewing three dimensional objects was stressed by Univac President R.E. McDonald.

"The day is envisaged when a contractor is likely to have a visual device at the construction site connected to a central computer programmed with house designs," he said. "Then an architect's customer could go to a construction site and see various computer-produced building designs as if they were already on the site."

"We believe that shortly 25% of all computers will have some form of graphic output," he added.

Data Bank Connections

One particular reason why graphic output shortly would be added to computers, he suggested, was because it was intrinsically tied to management information systems and the data banks which are expected to pro-



These two photographs of actual displays on the new Univac graphic system illustrate the clarity and detail provided by the

system in the next few years. The graphic display, he pointed out, is the easiest way such masses of information can be comprehended.

Instead of a lengthy readout of printed information, the display unit presents the data in analyzed form as a chart or graph. The design can be changed with a light pen and the whole process changed again.

Software

The software prepares programs both for the master computer and for the controller computer. The controller computer has an unusually fast 600 nanosecond cycle. It has 48 instruction codes and an execution time estimated at 1.2 microseconds per instruction. Multiply and divide instructions are handled by subroutines. The software in the controller normally requires 6K for buffering displays and connecting with the central computer system, leaving the remainder for local programs.

Vector Storage

Data for the screen is held in either long vector form (using two words per line of any length), or short vector form (one word per line for up to 63 units). It can

be handled either by the use of absolute addresses or incrementally from the end and position of the previous vector.

Digital Deflection System

Technically, the main advantage of the new system is its use of direct digital deflection technique. In contrast to the typical analog system display in use, the digital deflection technique produces displays of superior characteristics in terms of speed, resolution and accuracy.



new system. The map of Florida, because of detail in the coastline, required as much storage as the design.

Univac says that all digital techniques in the 1557/1558 system enable speed and accuracy, in excess of what has been available to date, to be achieved. This capability is high enough to design integrated circuits and detailed drawings of complex mechanical parts. Other suitable applications would be automotive design, architectural drawings, mathematical models, and drawings of animated cartoons on-line.

By using a digital technique, the

process of converting digital inputs into analog signals and then amplifying them to high current levels is eliminated. Instead, the Univac digital deflection system permits a digital representation to drive the deflection system directly, eliminating the differential amplifiers and feedback loops and their attendant adjustments.

The terminal is equipped with a keyboard containing standard alphanumeric and 40 function keys plus a light pen.

Complaints Increase 22%

BBB Criticizes Computer Billing Systems

By a CW Staff Writer

NEW YORK — A 22% increase in customer complaints involving incorrect billing or crediting of accounts accrued primarily to careless clerical help or start-up problems accompanying the installation of new and complex EDP systems" has been reported by the Better Business Bureau of Metropolitan New York, Inc. in its fourth quarterly study on why customers complain.

Analysis of 10,011 letters received over a three month period showed that the category contained 6% of all complaints. The report covered only the area served by the New York bureau.

However, bureau officials could not break down the figures for Computerworld to show what percentage of the complaints could actually be ascribed to computer start-up problems, or even to define how long the start-up period was.

Typical Complaint

Typical of complaints received by the bureau is a letter from a man in Silver Spring, Wash., who is incensed by what he believes to be a deliberate fraud: double billing.

Sending copies of letters written to two large credit card companies — one in Washington and

the other here — which apparently honor charges made by the other's card holders, the writer explained that both companies were continuing to bill him for a luncheon a year ago although he had promptly paid the first bill sent to him. To make matters worse, he said, both companies keep adding interest and service charges to the bills.

This is not the first time that he has run into troubles with computers, he wrote, adding that he has had similar problems with two large hotels and a large retail company. To him, it is a case of fraud.

The Better Business Bureau feels that it is not the double billing and repeated billing that has aroused his ire, but the fact that he has been unable to get a sensible answer to his letters.

BBB Answers

"Until the recipient's guilt of interest [to defraud] is proven... [companies] should acknowledge to at least some degree that the error just possibly may be on the part of the company and that the company is as eager to get the right answer to the problem as the recipient," the bureau advised its members.

EDP SYSTEMS BROKERAGE

National brokerage firm with over 60 branch offices is creating a professional staff group to develop and sophisticated their computer services to management.

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Box 4002

The new graphic system can be used for designing integrated circuits, as shown, and other complex parts, according to Univac.